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Impact of Information Technology (IT) on Financial Performance of Jordanian Banks

أثر تكنولوجيا المعلومات على الأداء المالي للبنوك الأردنية

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Dedication

This thesis is dedicated to my dearest father and to my beloved tender mother.

To my sister and brother.

To my best friends Fayssal, who helped me in achieving this thesis.

To my freinds Souad , Wafaa and all those who inspired my life

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List of Abbreviations

IS	Information System
IT	Information Technology
ISD	Information System Department
SIC	Standard Industrial Commerce
AIS	Accounting Information System
B2B	Business to Business
B2C	Business to Consumer
P2P	Peer-to-Peer
TPS	Transaction Processing System
MIS	Management Information System
DSS	Decision Support System
EIS	Executive Information System
EFT	Electronic Fund Transfer
ATM	Automate Teller Machines
PIN	Personale Identification Number

Abstract

Impact of Information Technology on Financial Performance of Jordanian Banks

By Wassila Henni

Supervised by

Dr. Moh'd M. Ajlouni

The purpose of this study is to examine the impact of adapting Information Technology (IT) on the financial performance of Jordanian banks listed in Amman Stock Exchange (ASE) for the period of 2005-2008. Importance of IT investments may be indirectly related to the bank performance by improving financial performance or enhancing services quality, which requires future investigations. The problem of the study can be best described in terms of the following questions: what are the best dimensions of IT investment in Jordanian banking sector? And, is there any relationship between IT investments and financial performance of Jordanian banks?

In order to achieve this goal, a questionnaire is administered for the sake of evaluating the possible impact of IT in the banking sector, while the performance is estimated by relevant financial ratios. Analysis of variance (ANOVA) and regression are employed to depict the possible relationships in the collected data. Result of the study revealed that there is no relationship between IT and performance in Jordanian banks. Therefore, it can be concluded that investments in IT has no effect on performance of Jordanian banks, and that can be explained by other factors.

Finally we recommendate to the manager more careful attention to the IT amounts invested to enable the positive impact of IT. And Investments in IT should be accompanied by appropriate organizational change to increase the likelihood of a positive payoff.

Key Words:

Information Technology (IT), Information System (IS), Performance, Jordanian Banks.

Chapter One

Introduction

Chapter One

Introduction

1-1 Preface

The revolution of Internet with the exponential development of breakthrough products of software and hardware is perhaps the most important characteristic of the new millennium, highlighting the domination of the new era of Information Technology (or just IT). This IT is expanding in all domains of life, and integrated especially in the field of business. IT is considered as a contingent factor that may explain the performance of the organizations and more specifically the banking sector.

The Jordanian banks operate in an increasingly complex and changing environment: Saturated markets, increasing competition, more access to knowledge (Shaukat and Zafarullah, 2009). Moreover, it is characterized by complexity and rapid change whether social, economic or technological. IT creates new opportunities for Jordanian banks in the way it organizes product development, delivery and marketing. That is why a substantial portion of banks administration budgets is associated with IT.

Therefore, it is suggested that the implementation of IT is an effective tool for banks' use in pursuit of improved performance. A large and growing body of academic research has been conducted to investigate the relationship

between bank performance and IT. In an era where management carefully weighs the benefits of every discretionary investment dinar, finding evidence of positive relationship between bank performance and IT investments is critical. This study examines the link between IT investment and bank performance in Jordanian banks listed in Amman Stock Exchange (ASE).

1-2 Problem of the Study

The problem of the study can be best described in terms of the following questions: what are the best dimensions of IT investment in Jordanian banking sector? And, is there any relationship between IT investments and financial performance of Jordanian banks?

1-3 Objectives of the Study

The main objective of this study is to examine the Impact of IT on the financial performance of Jordanian banks listed in ASE, and that is by studying the contribution of IT investment to banks performance measures during four years of investments (2005-2008). Another important objective is to examine the major determinants of IT in banking sector in Jordan.

1-4 Importance of the Study

The importance of this study stems from the fact that studying the financial performance of Jordanian banks and its relationship to IT investment is not a straightforward process as it pertains to the assessment of two difficult

concepts (i.e., performance and IT). Considering that each literature gave its proper methods of measurements. In addition, Jordanian banks invested a lot in IT. This study will examine how feasible are these investments.

1-5 Methodology of the Study

This Study adopts a descriptive/ inferential approach to depict the possible relationships in the collected data by the questionnaire and financial statements.

1-6 Hypotheses of the Study

The hypotheses of the study are:

Ho1: Average score on the utilization dimension of IT in Jordanian banks is not significantly different from the middle point of the scale (i.e., 3).

Ha1: The average score on the utilization dimension of IT in Jordanian banks is significantly different from the middle point of the scale (i.e., 3).

Ho2: Average score on the cost dimension of IT in Jordanian banks is not significantly different from the middle point of the scale (i.e., 3).

Ha2: The average score on the cost dimension of IT in Jordanian banks is significantly different from the middle point of the scale (i.e., 3).

Ho3: Average score on the effectiveness dimension of IT in Jordanian banks is not significantly different from the middle point of the scale (i.e., 3).

Ha3: The average score on the effectiveness dimension of IT in Jordanian banks is significantly different from the middle point of the scale (i.e., 3).

Ho4: Average score on the resource commitment dimension of IT in Jordanian banks is not significantly different from the middle point of the scale (i.e., 3).

Ha4: The average score on the resource commitment dimension of IT in Jordanian banks is significantly different from the middle point of the scale (i.e., 3).

Ho5: Average score on the managerial commitment dimension of IT in Jordanian banks is not significantly different from the middle point of the scale (i.e., 3).

Ha5: The average score on the managerial commitment dimension of IT in Jordanian banks is significantly different from the middle point of the scale (i.e., 3).

Ho6: Average score on the competitiveness dimension of IT in Jordanian banks is not significantly different from the middle point of the scale (i.e., 3).

Ha6: The average score on the competitiveness dimension of IT in Jordanian banks is significantly different from the middle point of the scale (i.e., 3).

Ho7: Average IT score of Jordanian banks is not significantly different from the middle point of the scale (i.e., 3).

Ha7: The average IT score of Jordanian banks is significantly different from the middle point of the scale (i.e., 3).

Ho8: Average IT score of Jordanian banks is not significantly different across the studied banks.

Ha8: The average IT score of Jordanian banks is significantly different across the studied banks.

Ho9: Average IT score of Jordanian banks is not significantly different between males and females.

Ha9: The average IT score of Jordanian banks is significantly different between males and females.

Ho10: Average IT score is not significantly different across the job positions.

Ha10: The average IT score of Jordanian banks is significantly different across the job positions.

Ho11: Average IT score of Jordanian banks is not significantly different across the years of experience.

Ha11: The average IT score of Jordanian banks is significantly different across the years of experience.

Ho12: Average IT score of Jordanian banks is not significantly different between bachelors and masters degrees holders of the staff.

Ha12: The average IT score of Jordanian banks is significantly different between bachelors and masters holders of employees.

Ho13: IT score of Jordanian banks is not significantly affecting the Return On Assets (ROA).

Ha13: IT score of Jordanian banks is significantly affecting the Return On Assets (ROA).

Ho14: IT score of Jordanian banks is not significantly affecting the Return On Equity (ROE).

Ha14: IT score of Jordanian banks is significantly affecting the Return On Eequity (ROE).

Ho15: IT score of Jordanian banks is not significantly affecting the earnings per share (EPS).

Ha15: IT score of Jordanian banks is significantly affecting the earnings per share (EPS).

Ho16: IT score of Jordanian banks is not significantly affecting the price-earnings ratio (P/E).

Ha16: IT score of Jordanian banks is significantly affecting the price earnings- ratio (P/E).

1-7 Structure of the Study

In addition to the Introduction chapter, five other chapters are developed in this thesis. The second one presents basic study concepts main theoretical elements related to the subject, including concept of Performance, IT, Jordanian banks. Chapter three introduces a brief review of the related literatures. Chapter four presents data and methodology used in the study. Chapter five presents the tests and analysis of the study. Finally, Chapter six summarizes and concludes the study.

Chapter Two

Theoretical & Institutional Background

Chapter Two

Theoretical and Institutional Background

2-1 Introduction

The term of performance is always associated with several concepts, like productivity; efficiency; capacity and competitiveness. Performance analysis of banking sector received a particular attention, during the past years. The focus moved from attempts of characterizing performance in terms of simple ratios to multidimensional systems' perspective. The change in banks performance is associated with infinite variables, one of those variables is IT investment, in fact it plays a vital role in banking environment and a substantial portion of bank budgets is associated with IT investment.

2-2 Part One: Performance Conceptualization

2- 2-1 Performance as a Multidimensional Concept

Miller and Toulouse (1986) integrated the concepts of strategy, structure, style, and decision within the personality of the leaders in assessing the performance. In other terms, the rigid structure, the style of direction, and the personnel characteristics of the leaders determine the performance of any firm (in Kosmidou and Zapounidis, 2008, p.41).

Venkatraman and Ramaniyam (1986) categorized the concept of performance into three broad categories: Financial, operational and organizational without specifying the method of measurement for the three outlined categories (Kosmidou and Zapounidis, 2008, p.44).

Boulian *et al.* (1996) outlined four basic dimensions of performance measurement. There are:

1- The continuity, related to the relation product/ service quality.

2- Financial profitability and competitiveness.

3- The economic efficiency used by the resources saved and productivity.

4- The human value, ethics like competency, intuitive ability, the self governance (autonomy) and the membership of the employees are important factors to understand the concept of performance of employees, but not sufficient alone to determine the level of competency (in Toufaily, 2004, p.40).

Marmus (1997) differentiated between four dimensions of performance:

1- The strategic performance theory developed by Peter and Waterman (1983) was against the short term performance, because some companies have bet everything on the performance at long term as guarantor of their survival.

2- The competitive performance like the model proposed by Porter (1981) with five competitive forces. The performance at long term docs not depend only on the action of the firm, but-also-to its ability to accommodate and appropriate the rules in a competitive sector. In other terms, the competitive nature of the system determines how the performance can be obtained.

3- The socio-economic performance based on the idea of organizational performance.

4- The economic and financial performance evaluated by different accounting systems (Toufaily, 2004, p.43).

Bughin *et al.* (1999) developed a model on the basis of a system of non-financial measures. This model takes into account four dimensions in connection with the strategy: Customer's dimension, financial dimension, internal processes and learning and growth.

The concept of performance is a polymorphic concept; each assessment of the performance must be contingent. It is relative to the orientation chosen by the researcher. In other terms, each researcher has to choose the determinants of his study. In this study we define the performance as the accomplishment of given task measured against preset standard of accuracy, completence, cost and speed. (Toufaily, 2004, p.44).

2-2-2 Bank Performance Measures

There are two approaches that measure bank performance. These are the qualitative approach and the quantitative one.

2-2-2-1 The Qualitative Approach:

In this respect, the literature developed the concept of qualitative performance. In the banking context, it means the qualification of the personnel in executing the several banking services. More precisely the performance can be explained by minimizing the time of executing the work, the satisfaction of employees and the efficiency of decision making. Therefore, the concept of performance can mean the quick access to information (Kosmidou and Zopounidis, 2008).

2-2-2-2 The Quantitative Approach:

The quantitative approach of the bank performance means measuring the results of bank policies and operations of processing, inspections, transport and storage in monetary terms. Their results are reflected in bank's Return On Equity (ROE), Return On Assets (ROA) (Seiford and Zhu, 1999).

Banks vary considerably in term of size, types of assets owned and types of services offered and many other factors (Deveraj and Kohli, 2003).

The power of banks in a competitive climate depends on its financial capacity to solve at inception, its ability to create cash from its operations;

from its access to capital market and its capacity to predict the potential unplanned cash short-falls etc (Seiford and Zhu, 1999).

Measuring the bank performance include using different methods to estimate the liquidity, the efficiency and the profitability of a bank by using different methods of financial analysis that will be discussed in details later.

2-2-3 Financial Analysis Methods

Financial analysis is a quantitative approach. There are three techniques of financial analysis for measuring performance. These are: Vertical, horizontal, and financial ratios, as detailed below:

2-2-3-1 Vertical Analysis

It is a comparison of an item on financial statement with different items on the same statement, like comparing the level of current assets with the level of current liability using the balance sheet of a firm to measure liquidity; or using the income statement to compare net income with total sales (Wang and Lee, 2007).

2-2-3-2 Horizontal Analysis

It is a comparison of specific items in a financial statement or a ratio for different periods of time, like looking if a company's earning has gone up or down (Wang and Lee, 2007).

2-2-3-3 Financial Ratios Measures

In order to evaluate the financial performance of a bank, different financial ratios are commonly used as evaluation criteria. It consists of dividing one financial statement item by another. They help the analysis and interpret financial statement by using specific relationships (Ben Romdhane, 2004).

The analysis of financial ratios has traditionally been used to measure the financial situation of a bank through a comparison of its ratios with those of another firms operating in the same sector (Bashir, 1999).

In Finance, five categories of financial ratios are highlighted by:

1- Profitability Ratios.

2- Market Value Ratios.

3- Liquidity Ratios.

4- Efficiency Ratios.

5- Debt Ratios. (Wang and Lee, 2007).

(1) The Profitability Ratios

It measures the bank ability to generate net income; and to evaluate the firm's use of its assets and control its expenses to generate an acceptable rate of return.

(A) Return on Equity (ROE): We can measure it by using the following formula:

ROE= Net Income/Total Equity= NI/TEq

It measures the firm efficiency at generating the profit from every unit of shareholder equity. It shows how well a company can use investment funds to generate earning growth. This ratio is considered as one of the most important profitability ratios. According to this ratio, the owners may decide to continue the activity or not. The higher this ratio the better situation.

(B) Return on Assets (ROA): We can measure it by using the following formula:

ROA= Net Income/ Total Assets= NI/TA

It is a key concept in financial analysis because it is used to measure whether assets are being productively employed. It is useful in comparing the performance of financial institutions (e.g., Banks) because the majority of their financial values have a carrying value that is close to their actual market value. The higher this ratio the better situation.

(2) Market Value Ratios

We mean by market, the secondary market, specifically the stock market. Market ratios measure investor response to own a company's stock and also the cost of issuing stock.

(A) Earning Per Share (EPS)

EPS = Net Earnings/Number of Outstanding Common Stocks = NE/# of Common Stocks

EPS is the portion of a company's profit allocated to each outstanding share of common stock. EPS is generally considered to be most important variable in determining a share's price, it is also a major component used to calculate the price-to-earnings valuation ratio. The higher the better.

(B) Price-Earnings Ratio (P/E Ratio)

Is a valuation ratio of a company's current share price compared to its per-share earnings. Calculated as:

P/E= Market Price per Share/ Earnings per Share= MVPS/EPS

A high P/E suggests that investors are expecting higher earnings growth in the future compared to companies with a lower P/E.

(3) Liquidity Ratios

They measure the firm's ability to meet it's short term obligations as they fall due to use of liquid assets and similarities, without losses.

(A) Current Ratio (CR)

Current Ratio= Current Assets/ Current Liabilities= CA/CL

Measures whether or not a firm has enough sources to pay its debt over the next 12 months. It compares the firm's current assets to its current liabilities.

(B) Cash Ratio (CshR)

Cash Ratio=cash and quasi cash assets (Marketable securities) / current liabilities= (Cash+MS)/CL

This is the cash held by the bank as a proportion of deposits in the bank. The cash ratio measures the extent to which a corporation or other entity can quickly liquidate assets and cover short term liabilities.

(4) Efficiency Ratio

These ratios that are typically applied to bank in simple terms, and is defined as expenses as a percentage of revenue (expenses / revenue). Lower percentage is better since that means expenses are low and earnings are high.

(5) Debt Ratio (Leverage Ratio)

These ratios measure the firm's ability to repay long- term debt. These ratios refer to the use of debt to supplement investment.

Debt Ratio=Total Debt/ Total Assets

2-2-3-4 Limitations of Financial Ratios

Financial ratios are easy, useful and a straightforward method of financial analysis. However, some disadvantages should be noted as follows:

First, considering the financial ratios as a relationship between numerators and denominators, it is difficult to determine the item (numerator

or denominator) that cause differences in the value of the ratio (Helfert, 2001).

Second, one ratio holds little meaning; this includes the importance of using more than one ratio (Halkos and Salamouris, 2004).

Third, accounting data ignores the current market value of the bank and does not represent economic current situation (Deveraj and Rajiv, 2003).

2-3 Part Two: Information Technollogy Conceptualization

Information technology (IT) becomes increasingly a powerful tool in driving development, promoting innovation and enhancing competitiveness. Actually, the IT plays a vital role in improving the performance of all sectors without exception, one of those sectors is a banking section.

The impact of IT investment on bank performance is an important issue as it constitutes a substantial component of costs and exercises a strong influence on bank operations and strategy.

2-3-1 Basic Concepts

This section will provide some basic concepts of Information Technology (IT) and Information System (IS).

2-3-1-1 Information Technology (IT):

According to Rivard, (2000) "The IT is an application of computers and telecommunications to the collection, processing, storage, and dissemination of voice, graphics, texts and numerical information. Also, IT can be seen as tools, processes and methodologies, such as coding, programming, data communications, data conversion, storage and retrieval, systems analysis and design, system control, and associated equipment, employed to collect process, and present information in board term.

Also, it includes office automation, multimedia and telecommunications (Ho and, allik, 2006).

The concept of (IT) can also mean the human activities that design and use the artifacts; they are a part of the social structure of an organization (Shaukat and Zafarullah, 2009). In other terms, the word IT means what the firm can do technologically according to the people idea. (Indjkian and Siegel, 2005).

2-3-1-2 Information System (IS)

An information system (IS) is a combination of technology, people and processes to capture, transmit, store, retrieve, manipulate and display information (Laudon and Laudon, 1996). Note that IS is more than just the technology, it includes the people who run it, the people who maintain it, and the executives who manage it. It also includes the business processes that let people make use of the data, information and the knowledge that the system creates and maintains (Indjkian and Siegel, 2005).

There is a conceptual difference between IT and IS. The first one is more concerned with technology creation (IT artifacts), or the materiel used, while IS concerned about the usage by people of these technologies, and their social implications or effect (Achimugu *et al.*, 2009).

2-3-1-2-1 Components of Information System (IS)

Management Information System (MIS) or Computer Information System (CIS) consists of five components:

(1) **Hardware**: The physical equipment used in computing.

(2) **Software**: The set of instructions that controls the hardware (McLean *et al.*, 1999, p.693).

(3) In the early days of computers, **the people** directly involved in MIS tended to be programmers, design an analyst and a few external users.

(4) **Procedures**: Instructions that help people using the systems; they include items such as user manuals, documentation, and procedure to ensure that backups are made regularly.

(5) **Data Bases**: Are collections of related data that can be retrieved easily and processed by computers (McLean *et al.*, 1999, p.696).

To create an effective (IS) you need to do more than a simply purchase of the various components. Quality is an important issue in business today particularly when it is related to IS. The quality of an IS is measured by its ability to provide exactly the information needed by managers in a timely manner (Lai *et al.*, 2006).

2-3-1-3 Internet

It is a wide network that allows the firm to send and receive communications and to create an electronic location where it can post information about itself for others to consult. It became available for commercial use in the mid 1990s. The net becomes a universal capability through which people of different ages in different places can use it and reach their objectives (Beccalli, 2006).

2-3-2 The Application of Internet in Business

2-3-2-1 Electronic Commerce (E-Commerce)

A software application used to market, sell, buy, and service products or service over computer network (internet) (Indjikian and Siegel, 2005).

Four categories can be distinguished here:

A- Business to Business relations (B2B): Where the customer is another firm or another department within the same firm. This category is characterized by long-term stability, and costly data-processing systems (Achimugu, 2009, p.40).

B- Business to Consumer relations (B2C): Allow an individual to act at distinct through a telecommunication network (Achimugu, 2009, p.43).

C- Neighborhood or contract commerce: Includes face-to-face interactions between the buyer and the seller, as in supermarket (Achimugu, 2009, p.45).

D- Peer- to-Peer (P2P) commerce: Takes place without intermediaries. It includes the transfer of money from one individual to another (Achimugu, 2009, p.46).

2-3-2-2 Electronic Business (E-Business)

It includes the use of internet for other business tasks, communication and new business services with the development of internet technology. More firms are offering E-business services such as digital maps, remote data backup and supply chain management (Tippins, and Sohi (2003).

2-3-3 The IT and the Organization

This section explains how the IS is implemented in an organization by highlighting its roles.

2-3-3-1 The Definition of an Organization

The organization is social units, deliberately constructed to seek specific goals, controls its own performance and has boundaries separating it from its environment (Lubbe, 1994).

2-3-3-2 kinds of IS in an Organization:

We can distinct three kinds of information system implemented in any organization:

A- Transaction Processing System (TPS)

TPS captures, verifies, accepts, or rejects the data and validates the transactions. The goal of TPS is to improve transaction processing by speeding it up, using few people (decreasing the cost) and improve the efficiency (McLean *et al.*, 1999, p.86).

B- Management Information System (MIS)

It is a planned system of collecting, processing and storing data in form of information needed to the management of an organization. It consists of people, equipment and procedures that analyze, evaluate and distribute needed information timely, and accurate information to marketing decisions makers (McLean *et al.*, 1999, p.88).

C- Decision Support System (DSS)

DSS is an interactive software-based system. It includes the computerized systems, supports the organizational decision making activities and helps the decision makers by giving useful information from a combination of raw data, documents, personnel knowledge to solve problems and make decisions. As an example, it can present an inventory of all current information assets of the organization. It can also compare sales between this week and the next one (McLean *et al.*, 1999, p.89).

D- Executive Information System (EIS)

It facilitates and supports the information and decision making by providing easy access to internal and external information relevant to meet the strategic goals of an organization. The information needed are varied at different levels of the organization, accordingly, the information can be categorized as the following: Strategic information, managerial information and operational information (McLean *et al.*, 1999, p.90).

2-3-3-3 The Role of IT in the Organization

The IT is a strategic tool through which goals are expressed. In any organization the role that can be assigned to the IT are the following:

A- Facilitator Role: It is the most popular role because it works as a facilitator of change. It allows a greater efficiency in production. It offers various flexible tools and adaptable to needs. For example, internet provides access to many facilities such as email, searching information and internet telephony (Ben Romdhane, 2004).

B- Innovative Role: IT can, also, play a stronger role when it provides necessarily the infrastructure that changes the organization. In financial services, it consists of the basic infrastructure for new services such as electronic money, banking and insurance online (on internet). In some sectors, (IT) is not just a tool of change; it constitutes the same activity (lunardi and Becker, 2005).

C- Translator Role: It consists of materializing any strategic idea, the software plays this role: it translates into work, procedures, and the applications of strategies to streamline the accounting, administrative and logistic company.

D- Pretext Role: Finally, the IT merely plays a pretext role; when it is accused of being the cause of organizational failures, which results from ineffective procedures or decisions badly managed (Ben Romdhane, 2004).

2-3-4 The Use of IT in Banking Sector

IT prices have been significantly reduced. For instance, the price of PC declined. The introduction of telecommunication into banking sector dates to 1846, with the introduction of telegraph. Since 1990, a revolution in telecommunications reduced the cost of transmitting data (Beccalli, 2006). This revolution created enormous changes in the quality of services of the financial institution. As a result, a great productivity gains had been generated by advances in IT for commercial banking worldwide (Ubadineke, 2009).

The banking services become more sophisticated with the discovery of the Automated Teller Machine (ATM) which first appeared in the USA in 1968. Since the IT has developed the competition between banks, many new banking innovative strategies emerged from a new banking IS like: E-banking, smart card system and online banking (Kamel, 2005).

As a result of the revolution and continuous development, the face-to-face interaction between customer and the banker becomes widely required by all banks (Mshhour and Zaatreh, 2008).

2-3-4-1 Financial Services Industry

The financial services industry includes banking and insurance; and no-bank financial services like building societies, the securities exchange and financial services and insurance business. Growth in industry has been derived by:

(1) Globalization of financial transactions.

(2) Development of new and more sophisticated financial services and products.

(3) Increasing international activity.

(4) Significant growth in the funds management industry (Shaukat and Zafarullah, 2009).

2-3-4-2 Electronic Banking (E-banking)

Commonly called "E-Banking" exists since 1970s when multiple computers had been connected to a single network. After the technological revolution, the Electronic Banking is used to facilitate the customers in executing their own operations (Toufaily, 2004, p.99).

The E-banking is a service that allows the customers to conduct banking transactions through the internet using the computer and the mobile phone. It is a channel of distribution and delivery of financial services that is less expensive (Toufaily, 2004, p.110).

According to Ur Rahman, (2007), IT has helped the banking industry to deal with challenges the new economy process .The role of IT in the banking industry includes:

(1) IT opens new markets; offers new products, new services and efficient delivery channels of the banking industry (online electronics banking, Mobile banking and internet banking).

(2) IT has also provided banking industry tools to deal with the challenges of new economy; the IT becomes an important tool in recent financial sector it aims to increase the speed and reliability of financial operations and to strengthen the banking sector.

(3) The progress of IT and the development of the network significantly reduce the cost of fund's transfer.

(4) IT enables banks meet high expectations of customers.

(5) IT provides solutions to banks to take care of their accounting and back office requirements.

Through E-Banking the customer can:

(1) Access to accounts every day, even on week-end.

(2) Access directly to the balances and checking position of credit centre.

(3) Transfer the funds between the accounts.

(4) Download the information needed directly (the reports and emails).

(5) Receiving and paying bills online (without envelopes and stamps).

(6) Have any financial advice and comparison of banking services.

(7) See the scanned images of checks cashed (Toufayli, 2004, p.131).

2-3-4-3 The Main E-Banking Services

(1) Electronic Funds Transfer (EFT): Electronic Fund Transfer (EFT) uses computer and electronic technology as a substitute for checks and other papers. EFT refers to the computer-Based systems used to facilitate the financial transactions electronically (Rivard, 2000).

(2) Automated Teller Machines (ATM): A large number of electronic vending machines for liquid currency, allow the customer through the network to withdraw a deposit money into his account (Ben Rohmdan, 2004, p.79).

More precisely the ATM allows the customer to withdraw cash, make deposits or transfer funds between accounts. He generally insert an ATM card and enter his Personal Identification Number (PIN), in some cases when the

customer has not accounts he has to pay a fee to access to this service (Kamel, 2005, p.308).

(3) Direct Deposit: It lets the customer to authorize specific deposits, such as pay checks and social security checks to his account. It allows the automatic payment of insurance premiums, mortgages, and utility bills (Kamel, 2005, p.310).

(4) Pay –By- Phone Systems: By agreement, it lets the customer to give instructions to his bank for a payment of certain bills or transfer funds between accounts.

(5) Personal Computer Banking: It allows the customer to handle many banking transactions by using his personal computer. For instance, the customer can use his computer to view his account balance, request transfers between accounts, and pay bills electronically (Kamel, 2005, p.311).

(6) Credit Card Purchase Transactions: It permits the customer to purchase with credit card or ATM card. This can occur at a store or business, online or by phone. The process is similar to using a credit card, fast and easy; a debit card purchases transfers money quickly, from the bank's account customer to the firm's account. So, it is important to the customer to have funds in his account to cover his purchases (Ubadineke, 2009, p.125).

(7) Electronic Check Conversion: It converts a paper check into an electronic payment in a store or when a company receives the customer's

check in the mail; when he gives the check to his bank, the check is run through an electronic system that captures the banking information and the amount of the check (Ubadineke, 2009, p.126).

2-4 Part Three: The Jordanian Banking Sector

Financial transactions in Jordan are primarily intermediated through the banking sector; the Jordanian banking sector is regulated by the central bank changes in laws, and regulations in order to bring the banking sector operations to international standards.

2-4-1 Some Important Definitions

Some relevant definitions will be developed as the following:

(1) Financial Institution: An institution that provides financial services for its customers. There are three types of financial institutions:

(A) **Depository Financial Institutions**: such as Banks, Credit union, Trust companies and mortgage loan companies.

(B) Specialized Insurance companies, and pension funds.

(C) Conduitory Financial Institutions Brokers, underwriters, and investment funds (Lubbe, 1999).

(2) Central Bank of Jordan (CBJ): It was established in 1964, its main duties include issuing and controlling money supply of the Jordanian dinar currency, and maintenance of a national reserve of gold and foreign currencies; it also maintains and insures the safety of the banking sector (www.cbj.gov.jo).

According to the official site of central bank of Jordan its objectives are the following:

(A) Issuing and regulating bank notes and coins.

(B) Maintaining and managing the kingdom reserves of gold and foreign exchange.

(C) Acting as banker and fiscal agent to the government, and public institutions.

(D) Acting as a banker to banks and specialized credit institutions.

(E) Maintaining the safety of the banking system.

(F) Advising the government on the formulation and implementation of fiscal and economic policies.

(G) Managing monetary problems and participating in containing local economic problems.

(H) Regulation credit.

(I) Other roles, like the participation of the central bank of Jordan in the establishment of number of financial institutions like Amman Stock Exchange (www .cbj. gov. Jo).

(3) Commercial Banks or Retail Banks: Is a type of financial intermediary used to differentiate them from the investment banks; commercial banks,

offer a wide range of corporate financial services that address the needs of firms, in matter of providing deposit, loan and trading facilities' activities (Lunardi and Becker, 2005). There are 13 commercial banks in Jordan, see figure (3-1). (www.cbj.jo)

(4) Islamic Bank: Financial institution that conducts banking services, in order to attract a monetary sources and employed them effectively, the main goal will be to achieve maximum return. They aim to secure economic and social development under the Islamic law and principles (Ajlouni, 2008, p.110). There are two Islamic banks in Jordan. Like cited in figure (3-1).

(5) Foreign Bank: According to the OECD the foreign bank with a head office outside the country in which it is located. Banks often open a foreign branch in order to provide more services to their multinational corporation customers. However, operating a foreign branch bank may be considerably complicated because of the dual banking regulations that the foreign branch needs to follow (www.oecd.org). There are eight foreign banks in Jordan. Like cited in table (3-1)

Figure (3-1): Jordan Banking System (end of 2008)

Jordan Banking System
(End of 2008)

1964	Central Bank of Jordan	3

National Banks

Commercial Banks

1930	Arab Bank PLC	79	-	88
1956	Jordan Ahli Bank PLC	45	4	6
1960	Bank of Jordan PLC	62	14	8
1960	Cairo Amman Bank	57	6	17
1974	The Housing Bank for Trade and Finance	98	3	10
1977	Jordan Kuwait Bank	40	8	2
1978	Jordan Commercial Bank	25	2	3
1978	Arab Jordan Investment Bank	9	10	-
1989	Arab Banking Corporation (Jordan)	15	-	-
1989	Investment Bank	8	-	-
1991	Union Bank	16	1	1
1993	Societe Generale De Banque-Jordanie	16	-	-
1996	Capital Bank of Jordan	8	1	-

Islamic Banks

1979	Jordan Islamic Bank for Finance and Investment	56	10
1997	Islamic International Arab Bank PLC	18	-

Foreign Banks

1949	HSBC Bank Middle East LTD	3	2
1951	Egyptian Arab Land Bank	9	3
1957	Rafidain Bank	2	-
1974	Citibank N.A.	2	-
1969	Standard Chartered Bank	8	1
2004	National Bank of Kuwait	3	-
2004	Audi Bank	8	2
2004	BLOM Bank	6	-

Specialized Credit Institutions

Public Ownership

1959	Agricultural Credit Corporation	21
1965	Housing & Urban Development Corp.	3
1966	Cities and Villages Development Bank	11

Joint Ownership

1965	Industrial Development Bank*	4

Money Changers

In Amman	122
Out of Amman	76

Representative Offices

In Jordan for Foreign Banks	-
Out of Jordan for Jordanian Banks	9

- ■ Year of establishment.
- ■ Number of branches including headquarters.
- ■ Number of mini-branches.
- ■ Number of branches outside Jordan

*: The Industrial Development Bank (IDB) has been abolished as a specialized credit institution by the Law of Abolishing IDB Law for 2008 No. 26/2008, as a first step towards obtaining a license to operate as an Islamic bank.

Source: www.cbj. gov.jo

(6) Banking activities: Accepting deposits from the public and using them in full or in part to grant credit or for any other activities designated by the central bank (www.cbj. gov.jo).

(7) Specialized Credit Institutions: Are financial institution that provide banking services; this category of banks offers primarily retail, corporate and investment banking services. Its retail banking services include housing loans, personal loans, and car loans. It offers also, deposits, transfers credit card, trade finance, lending facilities, safe deposit boxes, online banking. (www.cbj.gov.jo).

2-4-2 Development of Banking Sector in Jordan

The development of banking sector in Jordan passes through the following steps (Al-Fahmouni and Abuzayed, 2009) and (www.cbj.gov.jo).

1- In **1925**, the Ottoman bank began its operations as the first commercial bank in Jordan.

2- In **1934**, Arab bank the most famous bank in Middle East opened its doors, followed by the Middle East bank in **1949**.

3- The number of Jordanian banks remained three banks until **1955**.

4- Between **1955** and **1960**, three banks were created i.e., Jordanian National Bank, Jordan Bank, and Cairo-Amman bank entered to join the Jordanian banking sector.

5- In **1970s**, Jordanian banking sector expanded as a result of opening Jordanian commercial banks: In one side there are some Arab banks like Jordan Kuwait Bank; Petra bank; Syrian Jordanian bank; and, in other side several foreign banks opened like Citibank; Chase Manhattan, and credit and Commerce bank.

6- Between **1974** and **1981**, Jordan lives its first experience with the Islamic banks in **1978**, the Jordan Islamic Bank for Finance and Investment, it became later in **1986**, the sixth largest Jordanian bank in term of its assets.

7- The second Islamic investment house which was established with Kuwaiti banking in **1981**, but went bankrupted in **1984**.

8- The third one is the Islamic International Arab bank; that was opened in **1998**.

9- In **1991** as a result of Gulf crisis, great number of Jordanian returnees from the Gulf States, and this event availed to the banking sector huge amount of liquidity which leads to be increased in the banking deposits.

10- Since the 1990's Jordan integrated the capitalism, significant progress in the monetary sector were developed by implementing economic adjustment and reform progress. The banking system in Jordan is fully owned by privates, well-developed, profitable and efficient banks. (Al-Fahmouni and Abuzayed, 2009) There are twenty-three banks in Jordan, consisting of, thirteen local commercial banks, two Islamic banks, and eight foreign banks.

These banks carry out their operations through a network of 593 branches and 67 representative offices all over the kingdom. The number of operations to total number of operating banks was 9.9 thousand citizens per branch at the end of 2008 (www. cbj.gov .jo).

2-4-3 Jordanian Banking Sector Activities

Like all banks in the world Jordanian banks do the following activities:

1- Accepting deposits.

2- Lending money.

3- Granting all types of credit.

4- Acting as "financial supermarket" for the sale (providing tools of payment) and (payments by ATM).

5- Issuing instrument of payment (like credit card).

6- Dealing its selling and purchasing of money and capital market instrument to its own account or for its customer account.

7- Financing through leasing.

8- Dealing in foreign exchange or forward and spot markets.

9- Issuing the banknotes (paper money issued by the bank and payable to bear on demand).

10- Issuing currency exchange (www. cbj.gov.jo).

2-4-4 The Performance of Jordanian Banking Sector

Traditionally, the banks use a system that consists of calculating several financial ratios used in calculating the financial performance, like: Return on Equity (ROE) and Return on Assets (ROA). Considering the several limitations of financial ratios, other measures must be taken to evaluate the performance in logical manner (Mashhour and Zaatreh, 2008, p.5).

The Jordanian banks combine financial and non-financial information, leading and logging, internal and external views, quantitative and qualitative approaches, which can be translated into efficient strategies that will give the bank the ability to offer suitable services that meet the needs of customers (Mashhour and Zaatreh, 2008, p.6).

2-4-5 Development of IT in Banking Sector in Jordan

In a competitive climate where 23 Jordanian banks colluded, the IT remains a key instrument of competitiveness that is why the banks in Jordan are one of the largest investors in the field of IT. There are many indicators that show a potential increase in the future (Al-Fahmouni and Abuzayed, 2009, p.70). In facts the banking sector in the kingdom is now using the online and real-time ability to modernize electronic fund transfers. In other terms, it allows the customers' accounts to be credited within 24 hours. Also, in order to provide credit facilities, the Jordanian banks issued credit cards

and debit cards as payment methods. The Jordanian banks offer also other services like E-banks, internet banking, phone banking, home bank, ATM card, MIS, Wide Area Network (WAN), Web site, Swift network, Real Time Gross Settlement (RTGS) system for credit transfer and Anti Money Laundering System (ALM). Other types of electronic money transfer systems are also used. For example: Western Union that makes its possible to send and receive money abroad within five minutes of initiating the transaction (Al-Fayoumi and Abuzayed, 2009).

Chapter Three

Literature Review

Chapter Two

Literature Review

3-1 Introduction

Empirical studies of Information Technology Investment impact on the financial performance were widely studied in western literature.

This chapter reviews relevant literature in two sections. Section one introduces the foreign studies, while section two introduces the Arabic ones.

3-2 Foreign Literature

Blanton (1988) studied organizing IT in today's retail banking environment. He discussed a study of organizational design of IT groups in two retail banks and the impact of each of these designs on the quality of IT support, he referred to bank (A) and bank (B), these two banks had approximately the same size, and the IT groups are centralized in the operations' group. However, within the operation group, the IT groups are organized very differently: In bank (A) the operations' group had four departments in which IT groups are distributed according to the type of support they provide. In bank (B), the operations' group was divided into three departments in which IT centralized in the Information System Department (ISD); the other two departments were responsible for bank

operations and general corporate services. The study was conducted in two parts: an analysis of organizational design and an analysis of quality of IT support on a seven points scale. Users indicated (1) effectiveness, and availability (2) their utilization of each type of IT support. These two measures gave an excellent indication of overall IT support quality and the statistical tests indicated that bank (A) was significantly higher than bank (B). This indicated that the organizational design of IT groups in banks have an impact on the quality of IT support provided to users.

Weil (1992) studied the relationship between investment in IT and firm performance in valves manufacturing sector. Six years of historical data on IT investment and performance were collected for 33 valve manufacturing firms. A model have been developed that posits a relationship between different types of IT investment and firm performance. Heavy use of transactional IT investment was found to be significantly and consistently associated with strong firm performance over the six years studied. Heavy use of strategic IT was found to be neutral in the long-term and associated only with relatively poorly performing firms in the short-term. The study suggested that early adapters of strategic IT could have spectacular success when the technology becomes common and the competitive advantage is lost. In addition, the context of the firm was included in the analysis. Conversion effectiveness, which measures the quality of the firm-wide management and

commitment to IT was found to be a significant moderator between strategic IT investment and firm performance.

Lubbe (1994) studied the effect of investing resources in IT on the performance of an organization. The purpose, was to study the effect of IT using industry in Namibia. He selected a sample of 48 organizations. It includes some stated organizations and schools. The period under study is between 1990 and 1992. He developed models such as efficiency ratio, IT efficiency ratio, operating cost efficiency ratio, IT efficiency ratio and return on turnover ratio. Using 120 questionnaire data, the main result of the study was that low profitability of the companies is at greater risk and associated with low level of IT capital intensity than high profitability companies with high level of IT. The second finding covers the competitive value of IT is complicated by the market structure of the organization such as the rate of technology change in organizations; the strategic dependence of organizations, and opportunities to redefine market structure through IT related cost economies.

Tippins and Sohi (2003) study IT competency and firm performance from the perspective of organizational learning. Their study proposed that organization learning plays a significant role in determining the outcomes of IT. They use a sample of manufacturing organizations in Standard Industrial Commerce SIC codes 35 industrial and commercial machinery manufactures, 36 electronic and other electrical equipment manufacturers, transportation equipment manufacturers and 38 measuring and analyzing instruments

manufacturers. They sent mail surveys to 524 executives, and by using structural equations modeling with data collected, they show that organizational learning plays a significant role in mediating the effects of IT competency on firm performance.

Lai *et al.* (2006) study the impact of IT on the competitive advantage of logistics' firms in China. They aimed to examine the relationships between IT and competitive advantages at China's third-party logistics (3PL) firms. To achieve this purpose 760 questionnaires were distributed, and regressions were used to model the relationship between IT and competitive advantages. They found that the improvement of service variety advantage is flat when IT is at low level, higher IT may help improve delivery speed and reliability, customer relations and order accuracy. Higher IT may lead to a higher cost advantage when it is beyond the strategic necessity level.

3-3 Arabic Literature

Shinnar (2003) studied the impact of IT investment on financial performance of Jordanian banking sector. The objective of his study is to examine the relationship between IT investments to bank performance for a sample of 14 Jordanian banks for five years (1997-2001) to achieve his objective. The financial ratios had been employed and multiple regression models had been developed to examine these relationships. The results indicate no relationship between accumulated capital and bank profitability measured in

the same year of IT investment or the second or the third year. The difference between our study and *Shinar*'s study is that he used IT accumulated capital and annual investment) in evaluating IT (IT cost), however in our study we focused on other perspectives (output, cost, effectiveness, valence, resource and managerial commitment, competitiveness)

Ben Romdhane (2004) studies the impact of IT on the activities of Tunisian banks. The main objectives of the study are to examine changes that occur in the Tunisian banking sector, and to measure technological performance of commercial banks in the period of 1995-2000. The sample is consisted of 13 Tunisian commercial banks and 13 agencies. Methodology consisted of analyzing two questionnaires: The first one was distributed to IT management, and the second was for the services staff using the computer tool. The study found that the Tunisian commercial banks invest important amounts on IT improvement. The checks are first, mostly used as means of payment in Tunisia, followed by the ATM card. The main objective of this study, is to analyze the changes and mutations in various banking activities and measuring the extent of technological performance in Tunisian banks, however our study focus on the financial performance of Jordanian banks.

Karakish and Dahmash (2005) study the role of IT in enhancing the efficiency of internal control systems at the Jordanian manufacturing companies. The researchers covered all the Jordanian manufacturing companies which depend on intellectual languages in designing programs. The

methods used were statistical analysis and field study of a company. The important findings of this research are that internal control systems face many challenges in the use of IT. These challenges include the absence of documentation of the most of accounting Information System (IS) processes in the computerized system. Another issue is that intangible nature of the computerized systems and the absence of document lead to another problem related to the mechanisms of protecting the systems from hackers and securing customers data. Another result is that IT increases the efficiency of internal control systems and adds higher trustability on the outputs of Accounting Information System (AIS).

Al-Zo'bi (2005) studies the effect of using IT on improving performance, in terms of speed, quality, trustworthiness and job knowledge-ability. The research identifies the level of variance of using IT on task performance due to the difference in demographic characteristics such as sex, age, academic achievements and years of experience. Using 353 employees working at the departments of the Jordanian tax directorate located in Amman area, the study use percentage, frequency, simple regression analysis and variance analysis (ANOVA). The main result is that: There is an impact with a statistical implication for the implementation of IT on work performance in all dimensions.

Mashhour and Zaatreh (2008) developed a framework for evaluating the effectiveness of IS at Jordan banks. The paper measures the

factors which determine IS effectiveness at Jordan main banks. These variables are presumably system decision performance, system usage and user satisfaction among others that are considered the most effective variables in banks performance. A descriptive approach is conducted. High ranking managers at major banks were interviewed and information regarding banks general IT investments for conducting a cost–benefit analysis is collected. The data was collected by designing a survey and distributing it nationwide. The goal of surveying is to investigate the investment of IS at Jordan banks and to evaluate the contribution of IS in the effectiveness of banks operations. To achieve this goal, the research focuses on two tested instruments that were developed by **Moore and Benbasat** (1991) and **Idowu *et al.*** (2002). The main result is that following IS provide a competitive advantage to the banking industry and the effectiveness of IS has a positive impact on Jordan banks.

Al Dahir (2009) measures the impact of implementing Information Technology Balanced Scorecard (IT-BSC) on financial performance measurement system in the Jordanian banks. The aim of this study is to investigate the important use of (BSC) as a performance measurement system with IT integration in Jordan banking sector. The study takes a sample of 19 Jordanian banks and the data of 2008. It developed an integrate model that consists of five perspectives: Financial, international business process, strategic competitiveness; strategic competitiveness, customer satisfaction, and learning

growth, with IT indicator. The results show three significant relationship between IT application and the internal business process, financial and strategic competitiveness perspectives. Also, there is no significant relationship with customers and employee's perspective. IT-BSC model is a promising tool for organizations to access and evaluate their performance.

3-4 Significance of this Study

The majority of previous studies investigated different methods in estimating bank performance this is due to the difficulties of this concept, like using the analytical method Profit efficiency and cost efficiency. Therefore, this study investigates the effect of IT on the performance of Jordanian banks and it applied financial ratios analysis only for more recent period 2005-2008 this period is chosen in order to avoid the eventual impact of financial crisis (2009) on the IT investments and financial performance of Jordanian banks listed in Amman Stock Exchange (ASE). Concerning IT, most previous studies try to estimate it using the amounts of money spent on IT or the type of IT purchased, but this study considers the manner how IT assets are managed (qualitative method) as the better one in evaluating IT.

The difference between our study and *Shinar*'s study consist in the fact that he used IT accumulated capital and annual investment in evaluating IT (IT cost), however in our study we focused on other perspectives (output, cost,

effectiveness, valence, resource and managerial commitment, competitiveness).

Chapter Four

Data &

Methodology

Chapter Four

Data and Methodology

4-1 Introduction

This study presents an evaluation of the impact of IT investment on the performance of Jordanian banks. The methodology of this study is based on using Financial Ratios in estimating the banks performance, and by using a questionnaire in evaluating IT, we will examine the eventual relation between that two concepts. As cited, the previous literature about the profitability ratios alone are insufficient in evaluating the bank performance; that is why other ratios are used in the study.

4-2 The Data

4-2-1 Study Population

The population in this study consists of all (23) banks working in Jordan (13 commercial, 8 foreign, and 2 Islamic banks).

4-2-2 Study Sample

The sample consists of 15 banks, listed in Amman Stock Exchange (ASE) market. The sample of the study was reduced to 12 banks because

three banks did not respond to our questionnaire. The questionnaire was used in evaluating IT through seven perspectives:

(1) IT output: Which refers to the utilization of IT in the banks.

(2) IT costs: Referring to the evaluation of amounts spend on IT.

(3) IT effectiveness: Indicates the degree to which banks objectives are achieved.

(4) IT valence: Indicates the degree to which the IT is important to the bank.

(5) IT resource commitment: indicates the degree to which a bank put efforts (e.g. budgets, equipments, personnel and the like)

(6) IT Managerial commitment: indicates the degree of involvement different bank departments involve with the IT department.

(7) IT competitiveness: indicates the degree to which the bank has an advantage over major competitors.

The last four measures of IT are developed into questionnaire (Lai *et al.*, 2006). Respondents were asked to indicate the extent to which the banks performance is related to IT output, cost, effective, valence, resource commitment, managerial commitment and competency using a five point Likert scale. Whereas,

1= strongly disagree.

2= disagree.

3= neutral.

4= agree.

5= strongly agree.

4-2-3 Data Sources

This study considers the data of 12 banks operating in Jordan during the period 2005-2008. The data used in this study are financial information extracted and analyzed from the balance sheets and income statements and other information available in the annual reports. Also, other sources were used as articles, reports and working papers available to the researcher.

4-3 Variables of the Study

4-3-1 Dependent Variable

Performance is considered as a dependent variable peroxide by. Both of the Return On Assets (ROA) and the Return On Equity (ROE) are assumed to be good proxies for the measurement of the performance of bank. However, other measures will be used like Price- Earnings Ratio (P/E) and, Earnings per share (EPS).

4-3-2 Independent Variables

The IT indictors are the independent variables. A questionnaire was developed for estimating the IT considering seven concepts, the first three ones are developed by the researcher and the last four ones by referring to Lai *et al.*, (2006): IT output, IT costs, IT effectiveness, IT valence, IT resource commitment, IT managerial commitment, and IT competitiveness. All of these measures were anchored with a five point Likert Scale, the questionnaire is shown in the appendix (A).

4-4 The Methodology

This Study basically adopts a descriptive/ inferential approach to depict the possible relationships in the collected data by the questionnaire and financial statements. As a first step, the data was assessed for the reliabilities by the mean of Cronbach alpha. The threshold of 0.70 was considered by the researcher as the minimal accepted reliability for the outlined scales in the questionnaire (Lai *et al.* 2007). After purification of the measurements upon the reliability assessments, the variables of the study were obviously defined as the average score of the items constructing the dimension. In a further step, descriptive analysis was provided for each variable with a t-test for one sample testing whether the means of the variables were significantly different from the middle point of the Likert Scale (i.e., 3). The decision rule was to reject the null hypothesis if the significance value was less than 5%. The

following phase focused on the possible controlling variables (i.e., bank type, gender, administrative level, experience, educational level). The one way ANOVA is conducted to check for the possible differences in the IT score with respect to the levels of the highlighted factors.

In the last phase of the analysis, simple linear regression is adopted as a consistent tool to see if there is a significant effect of IT scores on performance variables (i.e., ROA, ROE, EPS, P/E).

4-5 Characteristics of the Sample

After distributing 96 questionnaires, a total of 78 participants from 12 banks responded for the questionnaire. The different frequencies of the responses among the studied banks are indicated in Table (4-1). As it is shown in this Table, the range of frequencies varied between 1.3% and 12.8%.

Table (4-1) Frequency Distribution of the Respondents

Bank Name	Frequency	Valid Percent %	Cumulative Percent %
Societé Generale	6	7.7	7.7
Capital Bank	10	12.8	20.5
Union Bank	1	1.3	21.8
Jordan Dubai Islamic Bank	5	6.4	28.2
Housing Bank	8	10.3	38.5
Arab Bank	5	6.4	44.9
Arab Jordan Investment Bank	8	10.3	55.1
Jordan Bank	5	6.4	61.5
Jordan Kuwait Bank	5	6.4	67.9
Cairo Amman Bank	10	12.8	80.8
Jordan Islamic Bank	9	11.5	92.3
Ahli Bank	6	7.7	100.0
Total	**78**	**100.0**	**100.0**

Table (4-2), shows that majority of the respondents were males with a frequency of 66.7% versus only 33.3% of females. The quasi totality of the participants in the study were administrators (38.5%), as represented in table (4-3). Also, it was found that more than 46% of the respondents have an experience more than 10 years (Table (4-4)). The sample exhibited a majority of bachelor degrees with more than 97% (Table (4-5)).

Table (4-2) The Gender of the Respondents

Gender	Frequency	Valid Percent	Cumulative Percent
Female	26	33.3	33.3
Male	52	66.7	100.0
Total	**78**	**100.0**	

Table (4-3) The Job Position of the Respondents

Job Position	Frequency	Valid Percent	Cumulative Percent
Administrator	30	38.5	38.5
Responsible for Division	7	9.0	47.4
Chief of a Department	21	26.9	74.4
Cheif Executif of an Office (CEO)	20	25.6	100.0
Total	**78**	**100.0**	

Table (4-4) The Experience of the Respondents

Experience	Frequency	Valid Percent	Cumulative Percent
1-5 years	25	32.1	32.1
6-10	17	21.8	53.8
>10	36	46.2	100.0
Total	**78**	**100.0**	

Table (4-5) Educational Level of the Respondents

Educational Level	Frequency	Percent	Valid Percent	Cumulative Percent
Bachelor	76	97.4	97.4	97.4
Master	2	2.6	2.6	100.0
Total	**78**	**100.0**	**100.0**	

Chapter Five

Analysis & Results

Chapter Five

Analysis and Results

5-1 Introduction

In studing the eventual Impact of IT investment on the performance of Jordanian banks, a series of tests analysis are employed: Reliability analyses (Cronbach alpha), one sample t- test (r = 3), analysis of variance (ANOVA) tests, and finally regression analysis.

5-2 Reliability Analyses

In this current section, reliability analyses (Appendix B) were carried out on the dimensions of the IT concept by the use of Cronbach's Alpha. The decision rule was to remove the items that influenced the reliability scores exhibiting an alpha less than 70% (Nunally, 1978). Starting by the output dimension, an alpha of more than 0.84 was found which is considered as an acceptable level. Concerning the costs' dimension, it was found an alpha of 0.67; trying to remove successively several items did not help in improving the value of alpha Cronbach for this dimension. Therefore, this entire dimension was removed from measurement in the next steps. It was found a reliability more than 0.79 for the effectiveness dimension suggesting to keep it in further measurements. The reliability factor for the valence dimension was less than 0.52 which stipulated to remove it automatically from the

measurement of IT score. Concerning the resource and managerial commitment, it was found successively a reliability of 0.81 and 0.73 suggesting that we can go ahead with these two dimensions. Finally, the competitiveness dimension, exhibited a reliability factor of 0.73 which is considered as an acceptable level of reliability.

5-3 Descriptive Statistics

The different descriptive statistics of the IT perspectives are displayed in Table (5-1). It can be seen from the table that the mean IT score varied along the interval [3.8, 4.17] with a minimum value of managerial Committment and a maximum value of Output. The volatility is dispersed along the interval [0.63, 0.74] with a minimum value of output and the maximum value of competitiveness.

Table (5-1) Descriptive Statistics of the IT Perspectives

Descriptive Statistics	N	Mean	Std. Deviation	Minimum	Maximum
Output	78	4.1752	.63502	2.67	5.00
Cost	78	3.9487	.64929	2.00	5.00
Effectiveness	78	3.9936	.70016	1.5	5.00
Resource Commitment	78	4.1474	.65519	2.50	5.00
Managerial Commitment	78	3.8077	.72179	1.00	5.00
Competitiveness	78	4.0192	.74049	2.00	5.00
Total IT Score	**78**	**24.0920**	**3.20290**	**14.83**	**30.00**
Valid N (listwise)	78				

5-4 The Results of IT Perspectives according to the Respondents

In this section, each reliable dimension of the measurement was tested whether it is significantly different from the middle point of the Likert scale i.e., the value of 3. Table (5-2) reveals the results. Starting by the output variable, Table (5-2) shows that the average output score is significantly larger than the value 3 (mean difference= 1.17, t (77) =16.34, $p<0.001$).

Table (5-2) One-Sample Test for IT perspectives

The Perspectives	Test Value=3					
	Test Statistics	df	Sig. (2.-Tailed)	Average	95% Confidence Intervel of the Difference	
					Lower	Upper
Output	16.345	77	0.000	1.17521	1.0320	1.3184
Cost	12.905	77	0.000	0.94872	.8023	1.0951
Effectiveness	12.533	77	0.000	.99359	.8357	1.1515
Ressource Commitment	15.467	77	0.000	1.14744	.9997	1.2952
Managerial Commitment	9.883	77	0.000	.80769	.6450	.9704
Competitiveness	12.156	77	0.000	1.01923	.8523	1.1862

Table (5-2) shows One-Sample Test for IT perspectives: Concerning the Cost variable, Table (5-2) shows that the average cost score is significantly larger than the middle point (mean difference=0.94, t(77)=12.90, p<0.001). Also, it is found that the average effectiveness score is significantly larger than the middle point (mean difference=0.99, t(77)=12.53, p<0.001). Similar results are found for the source commitment, the average score is larger than the middle point (mean difference=1.14, t (77)=15.46, p<0.001).

According to Table (5-2), the average managerial commitment score is greater than the middle point (mean difference=0.8, t (77) =9.88, p<0.001). Finally, the average competitiveness score is higher than the middle point (mean difference=1.01, t(77)=12.15, p<0.001). Where the least student value is t(77)=9.88 showed a significance value less than 0.001.

5-5 The Results of IT Total Score for each Bank in the Sample

In the table (5-3), descriptive statistics of IT score that were provided for each bank included in the sample size. It was generally found that the mean IT score varied along the interval [19.93, 26.50] with a minimal value for Jordan Dubai Islamic bank and a maximum value for Union Bank. The volatility of IT score was dispersed across the interval [1.24, 4.67] with a minimal value for Capital bank and a maximum value for Arab Jordan Investment bank.

Table (5-3) Descriptives for IT Score per Bank

Bank Name	N	Average	Std. Deviation	Std. Error
Societe Generale	6	21.7778	2.95647	1.20698
Capital Bank	10	26.4167	1.24040	.39225
Union Bank	1	26.5000	.	.
Jordan Dubai Islamic Bank	5	19.9333	3.22447	1.44203
Housing Bank	8	25.5208	2.80368	.99125
Arab Bank	5	22.7333	1.25056	.55927
Arab Jordan Investment Bank	8	22.5833	4.67431	1.65262
Jordan Bank	5	23.1333	3.87549	1.73317
Jordan Kuwait Bank	5	24.2333	2.62096	1.17213

Cairo Amman Bank	10	26.1167	2.41529	.76378
Jordan Islamic Bank	9	24.6481	2.03177	.67726
Ahli Bank	6	23.3067	2.41133	.98442
Total	**78**	**24.0920**	**3.20290**	**.36266**

5-6 Analysis of Variance (ANOVA) Tests

As it was highlighted previously in this study, the dependent variable is IT score, where it is provided in Table (5-3) with different descriptive statistics with respect to each Jordanian bank included in the study.

Table (5-4) shows the (ANOVA) test whether IT score is significantly different across the different Jordanian banks. It is found that the average IT score is significantly different among the Jordanian banks ($F(11, 66)=3.19$, $p<0.01$) showing clear disparities of IT across the studied banks.

Table (5-4) ANOVA of IT Score versus banks

	Sum of Squares	df	Mean Square	F	Sig (p)
Between Groups	274.389	11	24.944	3.194	.002
Within Groups	515.520	66	7.811		
Total	**789.908**	**77**			

Table (5-5) reports, the different descriptive statistics with respect to each gender type. While, Table (5-6) provides (ANOVA) test whether IT score is significantly different between males and females. It is found that the average IT score is not significantly different between males and females ($F(1,76)=0.09$, $p>0.05$).

Table (5-5) Descriptives for IT Score per Gender

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Female	26	23.9297	2.71453	.53236	22.8333	25.0262
Male	52	24.1731	3.44328	.47750	23.2145	25.1317
Total	**78**	**24.0920**	**3.20290**	**.36266**	**23.3698**	**24.8141**

Table (5-6) ANOVA of IT Score versus Gender

	Sum of Squares	df	Mean Square	F	Sig(p)
Between Groups	1.026	1	1.026	.099	.754
Within Groups	788.882	76	10.380		
Total	**789.908**	**77**			

Table (5-7) displays, the different descriptive statistics with respect to each job position type while Table (5-8) provides (ANOVA) test whether IT score is significantly different across job position's types. It is found that the

average IT score is not significantly different among the job position's types ($F(3, 74)=2.08$, $p>0.05$).

Table (5-7) Descriptives for IT Score per Job Position

Job Position	N	Mean	Std. Deviation	Std. Error
Administrator	30	23.3278	3.20066	.58436
Responsible for devision	7	23.4048	3.21002	1.21327
Chief department	21	24.0556	3.73621	.81531
CEO	20	25.5170	2.18063	.48760
Total	**78**	**24.0920**	**3.20290**	**.36266**

Table (5-8) ANOVA of IT Score versus Job Position

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	61.468	3	20.489	2.081	.110
Within Groups	728.441	74	9.844		
Total	**789.908**	**77**			

Table (5-9) reports the different descriptive statistics with respect to each category of experience by years, while table (5-10) shows the (ANOVA) test whether IT score is significantly different across experience categories. It

is found that the average IT score is not significantly different among the experience categories (F(2,75)=0.02, p>0.05).

Table (5-9) Descriptives for IT Score per years of experience

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
1-5 years	25	24.1867	3.00244	.60049	22.9473	25.4260
6-10	17	23.9902	3.86017	.93623	22.0055	25.9749
>10	36	24.0743	3.09253	.51542	23.0279	25.1206
Total	**78**	**24.0920**	**3.20290**	**.36266**	**23.3698**	**24.8141**

Table (5-10) ANOVA of IT Score versus years of experience

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.412	2	.206	.020	.981
Within Groups	789.497	75	10.527		
Total	**789.908**	**77**			

Table (5-11), shows the different descriptive statistics with respect to educational levels. While Table (5-12) reveals (ANOVA) to test whether IT

score is significantly different between bachelor and master degrees. It is found that the average IT score is not significantly different between them (F(1,76)=0.26, p>0.05).

Table (5-11) Descriptives for IT Score per Education Level

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean	
					Lower Bound	Upper Bound
Bachelor	76	24.0615	3.23322	.37088	23.3227	24.8003
Master	2	25.2500	1.76777	1.25000	9.3672	41.1328
Total	**78**	**24.0920**	**3.20290**	**.36266**	**23.3698**	**24.8141**

Table (5-12) ANOVA of IT Score versus Education Level

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	2.753	1	2.753	.266	.608
Within Groups	787.155	76	10.357		
Total	**789.908**	**77**			

5-7 Regression Analysis

In the current section, regression analyses is adopted to test whether the IT is significantly affecting the financial variables i.e., return on assets

(ROA), Return On Equity (ROE), earnings per share (EPS), and price earnings ratio (P/E).

Table (5-13) shows, that there is a negative relationship between IT and ROA (B= -0.06). However, this effect is found to be significant at 10% level of significance, which confirm the hypothesis (Ha13).

Table (5-13) Regression of ROA as a Function of IT

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	3.414	.792		4.311	.000
IT Score	-.062	.033	-.212	-1.889	.063

For the case of ROE, it is found from Table (5-14) that IT not have any significant effect on the ROE which confirm the null hypothesis (Ho14)

Table (5-14) Regression of ROE as a Function of IT

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	10.124	3.065	-	3.303	.001
IT Score	.142	.126	.128	1.124	.265

From table (5-15), we found that IT have no impact on the EPS, (B=0.003), which confirm the null hypothesis (Ho15).

Table (5-15) Regression of EPS as a Function of IT

Model	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	Sig.
1 (Constant)	.262	.170		1.545	.127
IT Score	.003	.007	.044	.381	.705

From table (5-16) it is found that a negative relationship may exist between IT and (P/E), (B= -0.44), which confirm the hypothesis (Ha16)

Table (5-16) Regression of P/E as a Function of IT

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	29.079	6.140		4.736	.000
	IT Score	-.447	.253	-.199	-1.769	.081

5-8 Reporting the Results

There is a weak relation between IT and ratios (ROA, P/E) in Jordanian banks. This result is confirmed by "Robert Slow" in his study "Productivity Paradox" (noble prize of economics in 1987) saying that "We see the computer age every where except in the profitability and productivity statistics" (Dehning and J. Richardson, 2008). In other side, there is no-relation between performance measures (ROE, EPS). Accordingly, two main results can be concluded. This weak impact of IT on the performance of Jordanian banks, which is confirmed by the research of Im *et al* (2001), who find a positive relationship between performance and IT investment exists in the small firms and not in the large ones. Considering the sample of our study which is large banks (listed banks in Amman Stock Exchange), cited research explain the non-relationship between IT investment and performance measures. The weakness of relationship between IT and the performance may

seem surprising. However, the nature of work in bank landslide stipulates a certain logic concerning this fact. In fact, IT infrastructure is considered as the tool of transfer and implementation of bank knowledge among the different collaborators and this implies that IT is a necessary condition of performance but it is never a sufficient condition for it. That is why we may note that a certain evidence of IT score between the banks suggests a non significant difference which shows that all the banks are roughly using the same level of IT to provide services. Therefore, we may reasonably conclude that bank performance is affected by contingent factors that were not taken into account in this study but it is never affected by IT.

Similar results were found by *Shinnar* (2003), where a weak relationship was established between IT investment and banking performance. This literature evidence may come from the ambiguity and difficulty of IT measurement. Moreover, the relationship has a great likelihood of being non linear.

Chapter Six

Conclusion
&
Recommendations

Chapter Six

Conclusion and Recommendations

6-1 Introduction

In this chapter, we give a conclusion of the main results, limitations and recommendations to the further researches.

6-2 Conclusion of the Study

We concluded that

1- IT output, effectiveness, resource and managerial comittment and competitiveness are the main determents of IT in Jordanian banks

2- IT cost and valence are the variables less affected by IT in Jordanian banks

3-According to the current research, a negative relationship it is shown a clear evidence that a weak relationship between IT and performance ratios (ROA, P/E) in Jordanian banks is found.

6-3 Limitations of the Study

The most prominent parameters, which faced our study are determined firstly by the sample determination which is represented in our study by the Jordanian banks listed in Amman Stock Exchange, i.e., 15 banks; also, three banks were excluded in the study as the participation is voluntary, a fact which reduced our sample to only 12 banks. The study used financial ratios in measuring the performance (profitability ratios and market measurement ratios) where selection of these ratios was based on most prominent in the

literature, the use of other type of ratios may encounter the reversibility of the results found in the current study. The relationship between IT and bank performance was studied for five years (2005-2008), a larger period could be taken and the methodology of statistical analyses could be also modified to meet these new challenges.

6-4 Recommendations

This research had verified the eventual relationship between IT (output, cost, effectiveness, valence, ressource and managerial commitment, competitiveness) and financial performance (ROE, ROA, P/E, EPS), while finding weak relationship between IT and performance of Jordanian banks.

Based on the findings of this study, several implications for managers and researcher had emerged, arising both from the literature that has been reviewed and from the data analyses that have been conducted. They are as the follows.

6-4-1 Recommendations for Managers

A more careful attention should be paid by managers to IT investments to enable the positive impact of IT.

Investments in IT should be accompanied by appropriate organizational change to increase the likelihood of a positive payoff.

IT benefits intensify in those cases where IT investments are accompanied by corresponding changes in managerial commitment.

6-4 Recommendations to Further Researches

Considering the non response of all Jordanian banks, we recommended to the other researches to take all the population of Jordanian banks for longer period in order to broaden the field of research.

According to the limitations of financial ratios (cited in the theoretical background) other methods can be used in estimating the performance.

As cited in our discussion, by taking all the population of Jordanian banks the future researches can study if the size really affect the relationship between banks performance and IT investment in Jordanian banks which was highlighted by *Im et al.* (2001), (Dehning and Richardson, 2002).

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- www.ocde.org

Appendices

Appendix (A): Questionnaire

Arabic version

قسم العلوم المالية والمصرفية

كلية الاقتصاد والعلوم الإدارية

جامعة اليرموك

سيدتي/سيدي الفاضل

تقوم الباحثه باعداد رسالة ماجستير بعنوان **"أثر تبني تكنولوجيا المعلومات على أداء البنوك في الاردن"** تحت اشراف د.محمد العجلوني. لهدف إنهاء أطروحة ماجستير، الباحثة مهتمة لمعرفة المزيد حول بنية تكنولوجيا المعلومات الخاصة بمؤسستكم إجل تحديد العوامل والحصول على تقييم عام لمستوى أنظمة تكنولوجيا المعلومات الخاصة بأداء البنك.

بطبيعة الحال، لتحقيق هذا الهدف فإن الباحثة بحاجة إلى مساعدتكم للرد على بعض بنود الاستبيان الذي سوف يستغرق سوى دقائق قليلة، وسوف تساهم مساهمة حقيقية لمدى دقة ونجاح هذه الدراسة.

علما بأن البيانات الواردة في هذه الإستبانة سوف تعامل بسرية تامة ، و لن يتم الإفصاح عن أي منها .

مساعدتكم ستكون موضع تقدير كبير، وسوف تساعد الأكاديميين لمعرفة المزيد عن العلاقة بين تكنولوجيا المعلومات والأداء البنوك.

شكرا لتعاونكم

وسيلة هني

طالبة ماجستير في العلوم المالية و المصرفية

البيانات الأولية

1. الجنس:
   - ذكر
   - انثى

2. المستوى الإداري:
   - اداري/ فني تنفيذي
   - مسؤول شعبه
   - رئيس قسم
   - مدير الفرع

3. سنوات الخبره :
   - من سنة الى خمس سنوات
   - من ست الى عشر سنوات
   - أكثر من عشر سنوات

4. المستوى التعليمي :
   - بكالوريوس
   - ماجستير
   - دكتوراه

تحتوي هذه الإستبانة على 17 سؤال علما بأن (5) يشير إلى أعلى درجة الموافقة و (1) يشير إلى أقل درجه موافقة.

مقياس تكنولوجيا المعلومات

المادة	الرقم	الفقرة	أوافق بشدة	أوافق	أوافق بمستوى معتدل	لا أوافق	لا أوافق بشدة
الإستعمال	01	البنية التحتية لتكنولوجيا المعلومات (البرمجيات، قواعد البيانات، الشبكات، و الأشخاص) موجودة على النحو الأمثل لدعم جميع أنشطة البنك	5	4	3	2	1
	02	في البنك أنظمة تكنولوجيا المعلومات تسهل الوصول إلى نتائج الأنشطة اليومية	5	4	3	2	1
	03	نظام تكنولوجيا المعلومات متكامل و مندمج بشكل جيد في أنظمة البنك	5	4	3	2	1
التكاليف	04	تكاليف أنظمة تكنولوجيا المعلومات متتبعة بشكل جيد في البنك	5	4	3	2	1
	05	البنك يقدر بشكل جيد تكاليف تكنولوجيا المعلومات	5	4	3	2	1
	06	تكاليف تكنولوجيا المعلومات عادلة مبالغها معقولة عند مقارنتها بتكاليف منافسينا	5	4	3	2	1
	07	تكاليف تكنولوجيا المعلومات قد تؤثر بشكل ملحوظ على أداء البنك	5	4	3	2	1
الفعالية	08	الأجهزة والبرامج الموجودة في البنك تكفي لرفع أداء مختلف المهام	5	4	3	2	1
	09	نظم تكنولوجيا المعلومات متنوعة بشكل جيد لمواجهة التحديات الجديدة للقطاع المصرفي	5	4	3	2	1
التكافئ	10	تحديث نظم المعلومات مهم بالنسبة للبنك	5	4	3	2	1
	11	امتلاك نظم تكنولوجيا المعلومات متقدمة مهمة بالنسبة للبنك	5	4	3	2	1
إلتزام الموارد	12	البنك يضع جهود كبيرة مثل المعدات و كفاءة العمال في تحسين نظم البنك	5	4	3	2	1
	13	لبنك يضع جهود كبيرة مثل المعدات و كفاءة العمال في تحسين تطبيق تكنولوجيا المعلومات وغيرها من العمليات التجارية	5	4	3	2	1
الالتزام الإداري	14	مدير قسم تكنولوجيا المعلومات يساهم بشكل واسع في التخطيط الإستراتيجي للبنك	5	4	3	2	1
	15	مدراء الإدارات الأخرى(المالية، الموارد البشرية ... إلخ)يشاكون في التخطيط الإستراتيجي لتكنولوجيا المعلومات في البنك	5	4	3	2	1
المنافسة	16	البنك يقدم خدمات أكثر تنوع(المزيد من الخدمات للعملاء) مقارنة بالبنوك المنافسة	5	4	3	2	1
	17	البنك يقدم جودة خدماتية مميزة (رد سريع على استفسارات العملاء ،تواصل سلس مع الزبائن) مقارنة بالبنوك الأخرى	5	4	3	2	1

English Version

IT Assessment Questionnaire							
Perspective	**No.**	**Items**	**SA**	**A**	**MA**	**D**	**SD**
Output	1	IT infrastructure is optimally used to support all the activities in my organization	5	4	3	2	1
	2	In my organization IT systems facilitate the achievement of the predetermined outcomes of daily activities	5	4	3	2	1
	3	IT systems are well integrated as a whole enterprise system in my organization	5	4	3	2	1
Cost	4	The costs of IT systems are well tracked in my organization	5	4	3	2	1
	5	IT costs are well estimated in the bank	5	4	3	2	1
	6	The amount of IT costs is fair when benchmarked with our competitors' IT costs	5	4	3	2	1
	7	Our IT costs may affect significantly performance in my organization	5	4	3	2	1
Effectiveness	8	The existent hardware and software in my organization is sufficient to perform easily the different tasks	5	4	3	2	1
	9	IT systems are well diversified in my organization to meet the new challenges of the sector	5	4	3	2	1
Valence	10	Having modern IS is important to my organization	5	4	3	2	1
	11	Having advanced IT is important to my organization	5	4	3	2	1
Resource Comittment	12	My organization puts efforts (eg equipment, personnel…) in improvement IS	5	4	3	2	1
	13	My organization puts efforts(eg equipment, personnel…) in improving IT and other application to business operations	5	4	3	2	1
Managerial Commitment	14	The manager of IT related department are widely involved in the strategic planning of my organization	5	4	3	2	1
	15	The managers of other department (operations, financial, human resource ect…)are involved in IT strategic planning of my organization	5	4	3	2	1
Competitiveness	16	My organization offers service variety advantage (more customer services) comparing to my primary competitors	5	4	3	2	1
	17	My organization offers service quality advantage(quick response to customer inquiries, smooth communication with your customers) comparing to my competitors	5	4	3	2	1

SD= "Strongly *Disagree*"

D= "*Disagree*"

MA= "*Medium level of agreement*"

A= "*Agree*"

SA= "Strongly *Agree*"

Appendix (B): Reliability Analysis

Reliability Statistics

Cronbach's Alpha	N of Items
.846	3

Reliability Test of Output				
Output Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
IT infrastructure is optimally used to support all the activities in my organization	8.3462	1.710	.689	.810
In my organization IT systems facilitate the achievement of the predetermined outcomes of daily activities	8.1923	1.872	.774	.744
IT systems are well integrated as a whole enterprise system in my organization	8.5128	1.630	.697	.808

Reliability Statistics

Cronbach's Alpha	N of Items
.679	4

Reliability Test of Cost				
Cost Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The costs of IT systems are well tracked in my organization	11.6154	4.110	.436	.630
IT costs are well estimated in the bank	11.7308	3.784	.536	.568
The amount of IT costs is fair when benchmarked with our competitors' IT costs	11.7692	3.504	.585	.530
Our IT costs may affect significantly performance in my organization	11.8462	3.794	.329	.718

Reliability Statistics

Cronbach's Alpha	N of Items
.795	2

Reliability Test of Effectiveness				
Effectiveness items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The existent hardware and software in my organization is sufficient to perform easily the different tasks	4.0128	.584	.660	.[a]
IT systems are well diversified in my organization to meet the new challenges of the sector	3.9744	.597	.660	.[a]

Reliability Statistics

Cronbach's Alpha	N of Items
.514	2

Reliability test of Valence				
Valence Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Having modern IS is important to my organization	4.5641	.353	.346	.[a]
Having advanced IT is important to my organization	4.6154	.318	.346	.[a]

Reliability Statistics

Cronbach's Alpha	N of Items
.818	2

Reliability test of Resource Commitment				
Resource Commitment Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My organization puts efforts (eg equipment, personnel…) in improvement IS	4.0513	.543	.693	.[a]
My organization puts efforts(eg equipment, personnel…) in improving IT and other application to business operations	4.2436	.472	.693	.[a]

Reliability Statistics

Cronbach's Alpha	N of Items
.730	2

Relqibility test of Managerial Commitment				
Managerial commitment Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
The manager of IT related department are widely involved in the strategic planning of my organization	3.6410	.753	.580	.[a]
The managers of other department(operations, financial, human resource ect…)are involved in IT strategic planning of my organization	3.9744	.571	.580	.[a]

Reliability Statistics

Cronbach's Alpha	N of Items
.727	2

Reliability test of Competitiveness				
Competitiveness Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
My organization offers service variety advantage (more customer services) comparing to my primary competitors	4.0000	.693	.572	.[a]
My organization offers service quality advantage(quick response to customer inquiries, smooth communication with your customers) comparing to my competitors	4.0132	.706	.572	.[a]

a. The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.

الملخص

أثر تكنولوجيا المعلومات على الأداء المالي للبنوك الأردنية

من إعداد الطالبة: وسيلة هني

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قد تكون أهمية استثمارات تقنية المعلومات ذات الصلة بشكل غير مباشر في أداء البنك من خلال تحسين الأداء المالي أو تعزيز نوعية الخدمات، الأمر الذي يتطلب إجراء تحقيقات في المستقبل.

الغرض هو دراسة تأثير تكنولوجيا المعلومات على الأداء المالي للبنوك الأردنية المدرجة في بورصة عمان للفترة من 2005-2008. تدور مشكلة الدراسة حول الأسئلة التالية: ما هي أفضل تقنية المعلومات أبعاد الاستثمار في القطاع المصرفي الأردني؟ و، هل هناك علاقة بين استثمارات تكنولوجيا المعلومات والأداء المالي للبنوك الأردنية؟ من أجل تحقيق هذا الهدف ،تم توزيع استبيان من أجل تقييم الأثر المحتمل لتكنولوجيا المعلومات على القطاع المصرفي في حين تم تقدير الأداء من خلال نسب مالية ذات صلة. ويعمل تحليل التباين (ANOVA) ، والانحدار(Regression) إلى تصوير العلاقات المحتملة. كشفت نتائج الدراسة الى عدم وجود علاقة بين تكنولوجيا المعلومات والأداء المالي للبنوك الأردنية. لذلك، يمكن أن نستنتج أن الاستثمارات في مجال تكنولوجيا المعلومات ليس له أي تأثير على أداء البنوك الأردنية، والتي يمكن تفسيرها بعوامل الأخرى. أخيرا ينبغي أن يقترن الاستثمارات في مجال تكنولوجيا المعلومات بتغيير تنظيمي مناسب لزيادة احتمال وجود مردود إيجابي.

الكلمات المفتاحية: تكنولوجيا المعلومات, نظام المعلومات, الأداء, البنوك الأردنية.